

OM protein - protein search, using sw model

Run on: June 15, 2009, 01:03:29 ; Search time 73 Seconds  
(without alignments)  
1137.335 Million cell updates/sec

Title: US-10-561-671-2  
Perfect score: 531  
Sequence: 1 TSNVTFVNNATTVYGQNVY.....RTYTFPSSTGSGYTANNVNP 99

Scoring table: BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 4548778 seqs, 838641292 residues

Total number of hits satisfying chosen parameters: 8

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 95%  
Maximum Match 100%  
Listing first 45 summaries

Database : A\_Geneseq\_200812:\*  
1: geneseq:\*

Pred. No. is the number of results predicted by chance to have a  
same number than or equal to the score of the result being evaluated

score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

# SUMMARIES

Result No.	Query %			ID	Description
	Score	Match	Length DB		
1	531	100.0	99	ADW21532	Adw21532 Bacillus
2	531	100.0	99	ADW25806	Adw25806 Bacillus
3	531	100.0	99	AEA06468	Aea06468 Bacillus,
4	531	100.0	99	AEB72819	Aeb72819 Carbohydr
5	531	100.0	99	AET54700	Aei54700 Glucoamyl
6	531	100.0	99	AOG56868	Aog56868 Bacillus
7	531	100.0	613	ADW21550	Adw21550 Bacillus
8	531	100.0	613	ADW71773	Adw71773 Anoxybaci

# ALIGNMENTS

RESULT 1  
ADW21532  
ID ADW21532 standard; protein; 99 AA.  
XX  
AC ADW21532;  
XX  
DT 24-MAR-2005 (first entry)  
XX  
DE Bacillus sp. carbohydrate-binding module (CBM).  
XX  
KW Starch; sugar; high fructose starch-based syrup;  
KW high fructose corn syrup; fermentation; fuel; ethanol; hydrolysis;  
KW

KW sweetener; carbohydrate-binding module.  
 XX  
 OS Bacillus sp.  
 XX  
 PN WO2004113551-A1.  
 XX  
 PD 29-DEC-2004.  
 XX  
 PF 25-JUN-2004; 2004WO-DK000456.  
 XX  
 PR 25-JUN-2003; 2003DK-00000949.  
 PR 24-OCT-2003; 2003DK-00001568.  
 XX  
 PA (NOVO ) NOVOZYMES AS.  
 XX  
 PI Viksoe-Nielsen A, Andersen C, Pedersen S, Hjort C;  
 XX  
 DR WPI; 2005-075255/08.  
 XX  
 PT Producing soluble starch hydrolysate comprises subjecting aqueous  
 PT granular starch slurry below initial gelatinization temperature of  
 PT granular starch to action of Glycoside Hydrolase Family13 enzyme, and  
 PT fungal amylase.  
 XX  
 PS Claim 2; SEQ ID NO 2; 68pp; English.  
 XX  
 CC The invention relates to a method (M1) of producing a soluble starch  
 CC hydrolysate. The method involves subjecting an aqueous granular starch  
 CC slurry to the action of a first and second enzyme, where the first enzyme  
 CC is member of the Glycoside Hydrolase Family13, having alpha-1,4-  
 CC glucosidic hydrolysis activity and comprising a functional carbohydrate-  
 CC binding module (CBM), and a second enzyme chosen from a fungal alpha-  
 CC amylase (EC 3.2.1.1), a beta-amylase (EC 3.2.1.2) or glucoamylase  
 CC (EC 3.2.1.3).

CC (commonly known as glucan 1,4-alpha-glucosidase, EC 3.2.1.3). The  
 CC invention discloses amino acid sequences for functional CBM (SEQ ID Nos 1  
 CC -3), enzymes having alpha-amylase activity (SEQ ID Nos 4-18), and enzymes  
 CC having alpha-amylase activity with a functional CBM (SEQ ID Nos 19-22).  
 CC Also described are: (i) a process (M2) for the production of high  
 CC fructose starch-based syrup (HFSS), where a soluble starch hydrolysate  
 CC produced by method (M1) is subjected to conversion into HFSS, such as  
 CC high fructose corn syrup (HFCS), (ii) a process (M3) for production of a  
 CC fermentation product, where a soluble starch hydrolysate produced by  
 CC method (M1) is subjected to fermentation into a fermentation product,  
 CC such as citric acid, monosodium glutamate, gluconic acid, sodium  
 CC gluconate, calcium gluconate, potassium gluconate, glucono delta lactone,  
 CC sodium erythorbate, itaconic acid, lactic acid, gluconic acid, ketones,  
 CC amino acids, glutamic acid (sodium monoglutamate), penicillin,  
 CC tetracycline, enzymes, vitamins, such as riboflavin, B12, beta-carotene  
 CC or hormones, (iii) a process (M4) for production of fuel or potable  
 CC ethanol, where a soluble starch hydrolysate produced by method (M1) is  
 CC subjected to fermentation into ethanol, (iv) use of an enzyme having  
 CC alpha-amylase activity in a process for hydrolysis of starch, and (v) use  
 CC of an enzyme having alpha-amylase activity in a process for hydrolysis of  
 CC granular starch. Method (M1) is useful for producing a soluble starch  
 CC hydrolysate which is useful for production of high fructose starch-based  
 CC syrup (HFSS), a fermentation product, fuel or potable ethanol. An enzyme  
 CC having alpha-amylase is useful for the hydrolysis of granular starch. The  
 CC hydrolysates are useful as sweeteners or as precursors for other  
 CC saccharides, such as fructose. This sequence represents a carbohydrate-  
 CC binding module (CBM).

XX  
 SQ Sequence 99 AA;

Query Match	100.0%;	Score 531;	DB 1;	Length 99;
Best Local Similarity	100.0%;	Pred. No. 1.6e-50;		
Matches 99;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;

Qy	1	TSNVTFVNNATTYGGQNVYVVGNIPELGNWNIANAIQMTPESSYPTWKTTVSLPQGRKAE	60
Db	1	TSNVTFVNNATTYGGQNVYVVGNIPELGNWNIANAIQMTPESSYPTWKTTVSLPQGRKAE	60
Qy	61	FKFKIKDSAGNVIMENIANRITYTVPFSSTGSYTANNVNP	99
Db	61	FKFKIKDSAGNVIMENIANRITYTVPFSSTGSYTANNVNP	99

## RESULT 2

ADW25806	
ID	ADW25806 standard; protein; 99 AA.
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AC	ADW25806;
XX	
DT	07-APR-2005 (first entry)
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DE	Bacillus sp. Carbohydrate-Binding Module Family 20 CBM.
XX	
KW	Carbohydrate-Binding Module Family 20; carbohydrate-binding module;
KW	degradation; starch; fermentation; baking.
XX	
OS	Bacillus sp.
XX	
PN	WO2005003311-A2.
XX	
PD	13-JAN-2005.
XX	
PF	25-JUN-2004; 2004WO-US020499.
XX	
PR	25-JUN-2003; 2003DK-00000949.
PR	25-JUN-2003; 2003US-0482589P.
PR	26-JUN-2003; 2003US-0482589P.

PR 29-JUL-2003; 2003US-0490751P.  
 PR 14-OCT-2003; 2003US-0511044P.  
 PR 24-OCT-2003; 2003DK-00001568.  
 PR 27-OCT-2003; 2003US-0514854P.  
 PR 10-MAY-2004; 2004US-0569862P.  
 XX  
 PA (NOVO ) NOVOZYMES AS.  
 PA (NOVO ) NOVOZYMES NORTH AMERICA INC.  
 XX  
 PI Taira R, Tkagi S, Hjort C, Vikso-Nielsen A, Allain E, Udagawa H;  
 XX WPI; 2005-101485/11.  
 DR  
 XX  
 PT New hybrid enzyme comprising a catalytic module with alpha-amylase  
 PT activity and a carbohydrate-binding module, useful for liquefying starch  
 PT for subsequent fermentation to produce e.g., ethanol, citric acid,  
 PT vitamins, or antibiotics.  
 XX  
 PS Claim 1; SEQ ID NO 10; 102pp; English.  
 XX  
 CC The invention relates to a hybrid enzyme comprising a catalytic module  
 CC from a fungal alpha-amylase and a carbohydrate-binding module (CBM). Also  
 CC described is a variant of a fungal wild-type enzyme comprising a CBM and  
 CC an alpha-amylase catalytic module. The hybrid enzyme or the alpha-amylase  
 CC variant is useful for liquefying starch, where a gelatinized or granular  
 CC starch substrate is treated in aqueous medium with one of the above  
 CC enzymes. The method involves contacting the treated starch with a yeast  
 CC to produce fuel or potable ethanol. The method involves fermenting the  
 CC treated starch into a fermentation product, such as citric acid,  
 CC monosodium glutamate, gluconic acid, sodium gluconate, calcium gluconate,  
 CC potassium gluconate, glucono delta lactone, sodium erythorbate, itaconic  
 CC acid, lactic acid, gluconic acid, ketones, amino acids, glutamic acid  
 CC (sodium monoglutamate), penicillin, tetracycline, enzymes, vitamins,  
 CC such as vitamins B12, B6, B2, B1, B3, B5, B7, B9, B11, B12, B13, B14, B15, B16, B17, B18, B19, B20, B21, B22, B23, B24, B25, B26, B27, B28, B29, B30, B31, B32, B33, B34, B35, B36, B37, B38, B39, B40, B41, B42, B43, B44, B45, B46, B47, B48, B49, B50, B51, B52, B53, B54, B55, B56, B57, B58, B59, B60, B61, B62, B63, B64, B65, B66, B67, B68, B69, B70, B71, B72, B73, B74, B75, B76, B77, B78, B79, B80, B81, B82, B83, B84, B85, B86, B87, B88, B89, B90, B91, B92, B93, B94, B95, B96, B97, B98, B99, B100, B101, B102, B103, B104, B105, B106, B107, B108, B109, B110, B111, B112, B113, B114, B115, B116, B117, B118, B119, B120, B121, B122, B123, B124, B125, B126, B127, B128, B129, B130, B131, B132, B133, B134, B135, B136, B137, B138, B139, B140, B141, B142, B143, B144, B145, B146, B147, B148, B149, B150, B151, B152, B153, B154, B155, B156, B157, B158, B159, B160, B161, B162, B163, B164, B165, B166, B167, B168, B169, B170, B171, B172, B173, B174, B175, B176, B177, B178, B179, B180, B181, B182, 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B2012, B2013, B2014, B2015, B2016, B2017, B2018, B2019, B2020, B2021, B2022, B2023, B2024, B2025, B2026, B2027, B2028, B2029, B2030, B2031, B2032, B2033, B2034, B2035, B2036, B2037, B2038, B2039, B2040, B2041, B2042, B2043, B2044, B2045, B2046, B2047, B2048, B2049, B2050, B2051, B2052, B2053, B2054, B2055, B2056, B2057, B2058, B2059, B2060, B2061, B2062, B2063, B2064, B2065, B2066, B2067, B2068, B2069, B2070, B2071, B2072, B2073, B2074, B2075, B2076, B2077, B2078, B2079, B2080, B2081, B2082, B2083, B2084, B2085, B2086, B2087, B2088, B2089, B2090, B2091, B2092, B2093, B2094, B2095, B2096, B2097, B2098, B2099, B2100, B2101, B2102, B2103, B2104, B2105, B2106, B2107, B2108, B2109, B2110, B2111, B2112, B2113, B2114, B2115, B2116, B2117, B2118, B2119, B2120, B2121, B2122, B2123, B2124, B2125, B2126, B2127, B2128, B2129, B2130, B2131, B2132, B2133, B2134, B2135, B213

CC such as riboflavin, B12, beta-carotene or hormones. The starch slurry is  
 CC contacted with a polypeptide comprising a carbohydrate-binding module,  
 CC but not catalytic module. The hybrid enzyme or variant enzyme is useful  
 CC for preparing a dough-based product, which involves adding the enzyme to  
 CC the dough. This sequence represents a CBM.

XX

SQ Sequence 99 AA;

Query Match 100.0%; Score 531; DB 1; Length 99;  
 Best Local Similarity 100.0%; Pred. No. 1.6e-50;  
 Matches 99; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 TSNVTFYNNATTVYGQVYVVGNIPELGNWNINAIQMTPESSYPTWKTIVSLPQ GKATE 60  
 ||||||||||||||||||||||||||||||||||||||||||||||||||||||||  
 Db 1 TSNVTFYNNATTVYGQVYVVGNIPELGNWNINAIQMTPESSYPTWKTIVSLPQ GKATE 60

QY 61 FKFIKKSAGNVIWENIANRITYVPFSSTGSYTANWNP 99  
 ||||||||||||||||||||||||||||||||||||||||||||  
 Db 61 FKFIKKSAGNVIWENIANRITYVPFSSTGSYTANWNP 99

RESULT 3

AEA06468

ID AEA06468 standard; protein; 99 AA.

XX

AC AEA06468;

XX

DT 28-JUL-2005 (first entry)

XX

DE Bacillus, carbohydrate binding module.

XX

KW glucoamylase; carbohydrate binding module; fermentation.

XX

CC

OS Bacillus sp.  
 XX  
 PN WO2005045018-A1.  
 XX  
 PD 19-MAY-2005.  
 XX  
 PF 27-OCT-2004; 2004WO-US035991.  
 XX  
 PR 28-OCT-2003; 2003US-0515017P.  
 XX  
 PA (NOVO ) NOVOZYMES NORTH AMERICA INC.  
 PA (NOVO ) NOVOZYMES AS.  
 XX  
 PI Borchert T, Danielsen S, Allain E;  
 XX  
 DR WPI; 2005-347063/35.  
 XX  
 PT New hybrid enzyme comprising an amino acid sequence of a catalytic module  
 PT having glucoamylase activity and a sequence of a carbohydrate-binding  
 PT module, useful for producing a fermentation product such as ethanol, or  
 PT syrup.  
 XX  
 PS Disclosure; SEQ ID NO 4; 105pp; English.  
 XX  
 CC The invention relates to a hybrid enzyme which comprises an amino acid  
 CC sequence of a catalytic module having glucoamylase activity and an amino  
 CC acid sequence of a carbohydrate-binding module. The hybrid enzyme is  
 CC useful for producing a fermentation product such as ethanol, or syrup.  
 CC The present sequence represents the amino acid sequence of a Bacillus  
 CC glucoamylase, carbohydrate binding module.  
 XX  
 SQ Sequence 99 AA;



Query Match 100.0%; Score 531; DB 1; Length 99;  
 Best Local Similarity 100.0%; Pred. No. 1.6e-50;  
 Matches 99; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 TSNVFTVNNATTYGVVVGNIPELGNWNINAIQMTPESSPTWKTTVSLPQGAIE 60  
 |||||  
 Db 1 TSNVFTVNNATTYGVVVGNIPELGNWNINAIQMTPESSPTWKTTVSLPQGAIE 60

QY 61 FKFIKDSAGNVIWENIANRTYTVPFSSGTYTANWNP 99  
 |||||  
 Db 61 FKFIKDSAGNVIWENIANRTYTVPFSSGTYTANWNP 99

# RESULT 4

AEB72819

ID AEB72819 standard; protein; 99 AA.

XX

AC AEB72819;

XX

DT 06-OCT-2005 (first entry)

XX

DE Carbohydrate-binding module #3.

XX

KW glucoamylase; fermentation; cereals; alcohol; ethanol; fuel ethanol;

KW potable ethanol; industrial ethanol; gelatinization.

XX

OS Bacillus sp.

XX

PN WO2005069840-A2.

XX

PD 04-AUG-2005.

XX

PF 14-JAN-2005; 2005WO-US001147.

XX

vv

XX 16-JAN-2004; 2004US-0537071P.  
PR 14-DEC-2004; 2004US-0636013P.  
XX  
PA (NOVO ) NOVOZYMES NORTH AMERICA INC.  
PA (NOVO ) NOVOZYMES AS.  
XX  
PI Allain E, Wenger KS, Bisgard-Frantzen H;  
XX  
XX WFI; 2005-542205/55.  
DR N-PSDB; AEB72816.  
XX  
PT Producing fermentation product e.g. ethanol from starch-containing  
PT material involves saccharifying the material with specific glucoamylase,  
PT at temperature below initial gelatinization temperature of the material  
PT and fermenting.  
XX  
PS Disclosure; SEQ ID NO 15; 96pp; English.  
XX  
CC This sequence represents a carbohydrate-binding module (CBM) from  
CC carbohydrate-binding module Family 20. This sequence may be used in the  
CC construction of a hybrid alpha-amylase protein which may be used in the  
CC method of the invention. The method for producing a fermentation product  
CC from milled starch-containing material involves: saccharifying milled  
CC starch-containing material with the glucoamylase from the fungi *Athelia*  
CC *rolfsii*, at temperature below the initial gelatinization temperature of  
CC starch containing material; and fermenting using a fermenting medium. The  
CC process is carried out for 1 - 250, especially 80 - 130 hours, at pH of 3  
CC - 7, especially 4 - 5. The dry solid (DS) content in the process is 20 -  
CC 55 (preferably 25 - 40, especially 30 - 35) wt.%. The sugar concentration  
CC is kept below 3 wt.% during saccharification and fermentation. A slurry  
CC of water and milled starch-containing material is prepared before step  
CC (a). The milled-starch-containing material is prepared by milling starch-  
CC containing material to a maximum size of 0.1 mm.



XX AEI54700;

XX AC

XX DT 24-AUG-2006 (first entry)

XX DE Glucoamylase carbohydrate-binding domain SEQ ID NO:6.

XX DE textile; glucoamylase.

XX KW Bacillus sp.

XX OS

XX PN WO2006065579-A2.

XX XX

XX PD 22-JUN-2006.

XX XX

XX PF 01-DEC-2005; 2005WO-US044044.

XX XX

XX PR 02-DEC-2004; 2004US-0632611P.

XX XX

XX PA (NOVO ) NOVOZYMES NORTH AMERICA INC.

XX XX

XX PI Wu G, Liu J, Salmon S;

XX XX

XX DR WPI; 2006-454552/46.

XX XX

XX PT Desizing of sized fabric that contains starch or starch derivatives, in

XX PT the manufacture of fabric, involves incubation of the sized fabric in

XX PT aqueous acidic treating solution containing alpha-amylase.

XX XX

XX PS Disclosure; SEQ ID NO 6; 114pp; English.

XX XX

XX CC The invention relates to desizing of a sized fabric that contains starch

XX CC or starch derivatives during manufacture, by incubating the sized fabric

XX CC in an aqueous treating solution with a pH of 1 to 5 and

in an aqueous treating solution with a pH of 1-5 (preferably 2-4) and comprising an alpha-amylase. The alpha-amylase (preferably acid alpha-amylase) is of bacterial or fungal, such as filamentous fungus, origin. The alpha-amylase is a derived from *Aspergillus*, *Rhizomucor*, or *Meripilus*. The bacterial alpha-amylase is derived from a strain of *Bacillus* and is preferably AA560 alpha-amylase. The alpha-amylase is a hybrid enzyme having a carbohydrate-binding domain (CBD) (preferably starch-binding domain of fungal or bacterial origin derived from strains of *Aspergillus*, *Athelia*, or *Talaromyces*). The alpha-amylase having a CBD comprises a linker between the alpha-amylase and CBD or starch-binding domain, where the linker is derived from strain of *Athelia* or *Aspergillus*. Alternatively, the alpha-amylase is a hybrid alpha-amylase comprising a catalytic domain (CD) from *Rhizomucor pusillus* alpha-amylase that has a carbohydrate-binding domain (CBD) from the glucoamylase of *Athelia rolfsii*. The method is useful for desizing of sized fabrics (e.g. fabric made from fibres of natural, man-made or animal origin such as cotton fabric, denim, linen, ramie, viscose, lyocell, cellulose acetate, silk, or wool; or polyester fibers of man-made or natural origin such as poly(ethylene terephthalate) or poly(lactic acid); or fibers of nylon, acrylic, or polyurethane; polyester containing fabric or garment that consists of 100% polyester; or the polyester fabric consisting of polyester blend, such as polyester and cellulosic blend, including polyester and cotton blends; polyester and wool blend; polyester and silk blend; polyester and acrylic blend; polyester and nylon blend; polyester, nylon and polyurethane blend; polyester and polyurethane blend, rayon (viscose), cellulose acetate and tencel) during manufacture of fabric. The process facilitates desizing of the fabric during manufacture of new fabrics with traditional sizing/desizing equipments, hence no additional process equipment is required. In the process, demineralization takes place simultaneously and/or after desizing of the sized fabric in the same treating solution as compared to the prior art, thus the process saves time, and reduces cost of e.g. acids and manpower for acid addition as the pH adjustment step is eliminated. This sequence is a glucoamylase

sequence binding domain

CC carbohydrate-binding domain.

XX

SQ Sequence 99 AA;

Query Match 100.0%; Score 531; DB 1; Length 99;  
Best Local Similarity 100.0%; Pred. No. 1.6e-50;  
Matches 99; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 TSNVTFYNNATTYGVQNVVVGVGNIPELGNWNINAIQMTPSSYPTWKTIVSLPQKATE 60  
|||||  
Db 1 TSNVTFYNNATTYGVQNVVVGVGNIPELGNWNINAIQMTPSSYPTWKTIVSLPQKATE 60

QY 61 FKFIKDSAGNVIWENIANRTYTVPFSSGTYTANWNP 99  
|||||  
Db 61 FKFIKDSAGNVIWENIANRTYTVPFSSGTYTANWNP 99

RESULT 6

AOG56868

ID AOG56868 standard; protein; 99 AA.

XX

AC AOG56868;

XX

DT 01-MAY-2008 (first entry)

XX

DE Bacillus sp. alpha-amylase CBD domain protein.

XX

KW Alpha-amylase; endo-alpha-amylase; 1, 4-alpha-D-glucan-glucano-hydrolase;  
KW enzyme; EC 3.2.1.1.

XX

OS Bacillus sp.

XX

PN WO2007149699-A2.

VV

XX 27-DEC-2007.

XX PD

XX 06-JUN-2007; 2007WO-US070485.

XX PF

XX 21-JUN-2006; 2006US-0815788P.

XX PR

XX (NOVO ) NOVOZYMES NORTH AMERICA INC.

PA (NOVO ) NOVOZYMES AS.

XX PI

PI Liu J, Salmon S, Wu G;

XX DR

DR WPI; 2008-D53563/25.

XX PT

PT Combined desizing and scouring of a sized fabric containing starch or

PT starch derivatives during manufacture of a fabric by incubating the sized

PT fabric in an aqueous treating solution comprising an acid amylase and

PT acid scouring enzyme.

XX PS

PS Disclosure; SEQ ID NO 6; 43pp; English.

XX CC

CC The present invention provides a process for combined desizing and

CC scouring of a sized fabric containing starch or starch derivatives during

CC manufacture of a fabric. The process involves incubating said sized

CC fabric in an aqueous treating solution having a pH in the range between 1

CC and 7, which aqueous treating solution comprises an alpha-amylase such as

CC acid alpha-amylase (endo-alpha-amylase, 1, 4-alpha-D-glucan-glucano-

CC hydrolase) or hybrid alpha-amylase containing a carbohydrate-binding

CC domain (CBD) and at least one other acid enzyme (such as cellulase,

CC pectinase, lipase, xylanase and protease) facilitating said other fabric

CC treatment steps. Acid amylases of the invention are of bacterial or

CC fungal origin such as filamentous fungus origin. The present sequence is

CC a Bacillus sp. alpha-amylase (EC 3.2.1.1) CBD domain protein.

```

XX
SQ Sequence 99 AA;

Query Match          100.0%; Score 531; DB 1; Length 99;
Best Local Similarity 100.0%; Pred. No. 1.6e-50;
Matches 99; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 TSNVFTVNNATVYGQNVYVVGNIPELGNWNINAIQMTPESSYPTWKITVSLPQKALE 60
    ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db 1 TSNVFTVNNATVYGQNVYVVGNIPELGNWNINAIQMTPESSYPTWKITVSLPQKALE 60
    ||||||||||||||||||||||||||||||||||||||||||||||||||||||||

Qy 61 FKFIKKSAGNVINENIANRTYTVPFSSSTGSYTANWNVP 99
    ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db 61 FKFIKKSAGNVINENIANRTYTVPFSSSTGSYTANWNVP 99
    ||||||||||||||||||||||||||||||||||||||||||||||||||||||||

RESULT 7
ADW21550
ID ADW21550 standard; protein; 613 AA.
XX
AC ADW21550;
XX
DT 24-MAR-2005 (first entry)
XX
DE Bacillus alpha-amylase for granular starch hydrolysis.
XX
KW Starch; sugar; high fructose starch-based syrup;
KW high fructose corn syrup; fermentation; fuel; ethanol; hydrolysis;
KW sweetener; alpha-amylase; enzyme; EC 3.2.1.1;
KW carbohydrate-binding module.
XX
OS Bacillus.
OS Synthetic.
v v

```



XX WO2004113551-A1.  
 XX  
 XX PD 29-DEC-2004.  
 XX  
 XX PF 25-JUN-2004; 2004WO-DK000456.  
 XX  
 XX PR 25-JUN-2003; 2003DK-00000949.  
 XX PR 24-OCT-2003; 2003DK-00001568.  
 XX  
 XX PA (NOVO ) NOVOZYMES AS.  
 XX  
 XX PI Viksoe-Nielsen A, Andersen C, Pedersen S, Hjort C;  
 XX  
 XX DR WPI; 2005-075255/08.  
 XX  
 XX PT Producing soluble starch hydrolysate comprises subjecting aqueous  
 PT granular starch slurry below initial gelatinization temperature of  
 PT granular starch to action of Glycoside Hydrolase Family13 enzyme, and  
 PT fungal amylase.  
 XX  
 XX PS Claim 4; SEQ ID NO 20; 68pp; English.  
 XX  
 CC The invention relates to a method (M1) of producing a soluble starch  
 CC hydrolysate. The method involves subjecting an aqueous granular starch  
 CC slurry to the action of a first and second enzyme, where the first enzyme  
 CC is member of the Glycoside Hydrolase Family13, having alpha-1,4-  
 CC glucosidic hydrolysis activity and comprising a functional carbohydrate-  
 CC binding module (CBM), and a second enzyme chosen from a fungal alpha-  
 CC amylase (EC 3.2.1.1), a beta-amylase (EC 3.2.1.2) or glucoamylase  
 CC (commonly known as glucan 1,4-alpha-glucosidase, EC 3.2.1.3). The  
 CC invention discloses amino acid sequences for functional CBM (SEQ ID Nos 1  
 CC -3), enzymes having alpha-amylase activity (SEQ ID Nos 4-18), and enzymes

CC having alpha-amylase activity with a functional CBM (SEQ ID Nos 19-22) .  
 CC Also described are: (i) a process (M2) for the production of high  
 CC fructose starch-based syrup (HFSS), where a soluble starch hydrolysate  
 CC produced by method (M1) is subjected to conversion into HFSS, such as  
 CC high fructose corn syrup (HFCS), (ii) a process (M3) for production of a  
 CC fermentation product, where a soluble starch hydrolysate produced by  
 CC method (M1) is subjected to fermentation into a fermentation product,  
 CC such as citric acid, monosodium glutamate, gluconic acid, sodium  
 CC gluconate, calcium gluconate, potassium gluconate, glucono delta lactone,  
 CC sodium erythorbate, itaconic acid, lactic acid, gluconic acid, ketones,  
 CC amino acids, glutamic acid (sodium monoglutamate), penicillin,  
 CC tetracycline, enzymes, vitamins, such as riboflavin, B12, beta-carotene  
 CC or hormones, (iii) a process (M4) for production of fuel or potable  
 CC ethanol, where a soluble starch hydrolysate produced by method (M1) is  
 CC subjected to fermentation into ethanol, (iv) use of an enzyme having  
 CC alpha-amylase activity in a process for hydrolysis of starch, and (v) use  
 CC of an enzyme having alpha-amylase activity in a process for hydrolysis of  
 CC granular starch. Method (M1) is useful for producing a soluble starch  
 CC hydrolysate which is useful for production of high fructose starch-based  
 CC syrup (HFSS), a fermentation product, fuel or potable ethanol. An enzyme  
 CC having alpha-amylase is useful for the hydrolysis of granular starch. The  
 CC hydrolysates are useful as sweeteners or as precursors for other  
 CC saccharides, such as fructose. This sequence represents an alpha-amylase  
 CC with a functional CBM.

XX

SQ Sequence 613 AA;

Query Match 100.0%; Score 531; DB 1; Length 613;  
 Best Local Similarity 100.0%; Pred. No. 1.7e-49;  
 Matches 99; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 TSNVFTYNNATVYGVNVIPELGNWNIANAQMTPSSYPTWKTTSVLPQGAIE 60

|||||

ETL TSNVFTYNNATVYGVNVIPELGNWNIANAQMTPSSYPTWKTTSVLPQGAIE 60

XX

Db 515 TSNVTFVNNATTYGVQNVYVGNIPELGNWNINAIQMTSPSYPTWKTYSLPQCKAIE 574

Qy 61 FKFIKKDSAGNVIWENIANRITYTVPFSSGSGSYTANWNP 99  
|||||  
Db 575 FKFIKKDSAGNVIWENIANRITYTVPFSSGSGSYTANWNP 613

RESULT 8

ADW71773

ID ADW71773 standard; protein; 613 AA.

XX AC ADW71773;

XX AC ADW71773;

XX DT 24-MAR-2005 (first entry)

XX DT 24-MAR-2005 (first entry)

DE Anoxybacillus flavithermus alpha-amylase #3.

XX Anoxybacillus flavithermus alpha-amylase #3.

KW alpha-amylase; carbohydrate-binding affinity; surfactant; textile;  
KW sweetener; baking; ethanol; fuel; brewing; pulp; paper; bread; enzyme.  
XX Anoxybacillus flavithermus.

OS Anoxybacillus flavithermus.

XX Anoxybacillus flavithermus.

XX Anoxybacillus flavithermus.

FH Key Location/Qualifiers

FT Region 1..583

FT /note= "region specifically claimed in claim 1"

FT Region 1..455

FT /note= "region specifically claimed in claim 10"

FT Peptide 1..30

FT /label= signal\_peptide

FT Protein 31..613

FT Domain 31..484

FT /note = catalytic domain

FT Region 455..583

FT /note = region specifically claimed in claim 10

FT /note= "region specifically claimed in claim 16"  
 FT 485. .613  
 FT /note = carbohydrate binding domain  
 FT 485. .583  
 FT /note= "region specifically claimed in claim 25"  
 XX

PN WO2005001064-A2.

XX  
 PD 06-JAN-2005.

XX  
 PF 25-JUN-2004; 2004WO-US023031.

XX  
 PR 25-JUN-2003; 2003DK-00000949.

PR 25-JUN-2003; 2003US-0482589P.

PR 24-OCT-2003; 2003DK-00001568.

PR 27-OCT-2003; 2003US-0514854P.

PR 12-NOV-2003; 2003US-0519554P.

XX  
 PA (NOVO ) NOVOZYMES AS.

PA (NOVO ) NOVOZYMES NORTH AMERICA INC.

XX

PI Hoff T, Andersen C, Spendler T, Pedersen S, Vikso-Nielsen A;

PI Schafer T, Liu J;

XX

DR WPI; 2005-075552/08.

DR N-PSDB; ADW71772.

XX

PT Novel polypeptide having alpha-amylase activity and/or carbohydrate-  
 PT binding affinity, useful in preparing detergent composition and dough,  
 PT and in textile desizing.  
 XX

PS Claim 1; SEQ ID NO 6; 79pp; English.

XX

CC This information describes a novel polypeptide isolated from Streptococcus

CC This invention describes a novel polypeptide isolated from Anoxybacillus  
 CC flavithermus (Bacillus flavithermus) which has alpha-amylase activity  
 CC and/or carbohydrate-binding affinity. The novel polypeptide is useful 1)  
 CC in cleaning or detergent composition, preferably laundry or dish wash  
 CC compositions optionally with a surfactant), 2) for desizing and treating  
 CC textiles, fabrics, yarn or garments, 3) for preparing a dough-based  
 CC product with improved elasticity, firmness, softness and moistness, 4)  
 CC for liquefaction of starch, 5) in ethanol and fuel production from starch  
 CC or whole grains 6) in beer making or brewing 7) pulp and paper production  
 CC or 8) sweetener production. This sequence represents a novel  
 CC Anoxybacillus flavithermus alpha-amylase.

XX

SQ Sequence 613 AA;

Query Match 100.0%; Score 531; DB 1; Length 613;  
 Best Local Similarity 100.0%; Pred. No. 1.7e-49;  
 Matches 99; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy	1	TSNVFTVNATVYGQNVVVGNIPELGNWNINAIQMTSPSYPTWKTITVSLPQGAIE	60
Db	515	TSNVFTVNATVYGQNVVVGNIPELGNWNINAIQMTSPSYPTWKTITVSLPQGAIE	574
Qy	61	FKFKKDSAGNVIWENIANRITYVPFSSSTGSYTANWNP	99
Db	575	FKFKKDSAGNVIWENIANRITYVPFSSSTGSYTANWNP	613

Search completed: June 15, 2009, 01:04:43  
 Job time : 74 secs